What's New in Dentistry

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High survival rate of severely fractured maxillary central incisors. Occasionally, children and adolescents will have a traumatic accident and fracture a maxillary central incisor at or near the level of the alveolar bone. Although the long-term endodontic and restorative prognoses for the root fragment are often bleak, simply extracting the root could result in significant narrowing of the alveolar ridge and compromise implant or pontic placement in the future. But a recent study published in *Dental Traumatology* (2002;18:92–97) shows that these roots can survive indefinitely with little or no treatment. This was a retrospective investigation of 53 subjects who had severely fractured a maxillary central or lateral incisor. The fracture extended down to the level of the alveolar bone. Some had the coronal pulp removed and replaced with calcium hydroxide. Others in the sample simply had the root buried beneath the gingival, without even removing the pulp. The entire sample was evaluated after a minimum of two years. The results showed that out of 53 crown-root fractures, only five roots were ultimately extracted. The remaining roots were successfully retained. Even the five roots that were simply allowed to bury themselves beneath the gingival without removing or treating the exposed pulp were all successfully retained two years later. So, when you are faced with the problem of treating a patient with a severely fractured maxillary incisor, do not resort to extraction immediately. Delaying removal of the root not only permits more time to make the correct decision but also helps to maintain the alveolar width for future implant or pontic placement.

Periodontal attachment loss in children and adolescents. Because orthodontists treat primarily children and adolescents, there is little concern about periodontal problems because younger individuals typically do not have periodontal disease. But a study published in the *Journal of Periodontology* (2001;72:1666–1674) has determined that attachment loss does occur in adolescent individuals. The sample for this study consisted of about 9000 subjects between the ages of 12 and 21 years. These individuals consisted of all of the high school students in a large city. Each subject received a complete periodontal examination, including an assessment of attachment loss. Clinical attachment loss was defined as the distance from the bottom of the sulcus to the cementoenamel junction (CEJ). If the sulcular depth were located apical to the CEJ, then attachment loss has occurred. In this study, the authors found that 70% of the sample had at least one site with clinical attachment loss of about one mm. About 16% of the students had attachment loss that was greater than two mm. Finally, about 5% of the students had attachment loss greater than three mm. So, it is important for orthodontists not only to screen their adult orthodontic patients but also their adolescent patients in order to diagnose these defects before initiating orthodontic treatment.

Heavy orthodontic loading does not cause implant failures. Implants are occasionally used as anchors to support difficult orthodontic tooth movement and afterward as abutments for restorative dentistry. During orthodontic or orthopedic loading, the force or load on an implant can be high. Does heavy orthopedic loading jeopardize the success of an implant? A study published in the *International Journal of Oral and Maxillofacial Implants* (2002;17:405–412) compared the amount of bone around implants that had received a heavy orthodontic load with nonloaded control implants. The sample consisted of five experimental animals. Three implants were placed in the right and left zygomatic bones in each animal and allowed to integrate for eight weeks. Then a splint was fabricated over the teeth, and a coil spring was attached from two of the implants to the splint. A heavy orthopedic load was applied to these implants. The third implant was the nonloaded control. After eight weeks, all implants were removed and examined histologically. The amount of bone around the loaded and nonloaded implants was compared. The authors found no difference in the amount of bone surrounding the nonloaded and loaded implants. A heavy orthopedic load did not cause disintegration of the bone around the implant. Orthodontic or orthopedic loading does not jeopardize the eventual use of the implant as a restorative abutment.

Bleaching adversely affects composite bonding. Bleaching has become a popular method of whitening the maxillary and mandibular teeth. Carbamide peroxide is the main ingredient in most bleaching kits, and the results can be impressive. But during the bleaching process, oxide residue remains on the surface of the enamel for up to three weeks after removal of the bleach tray. A recent study published in the *Journal of Dental Research* (2002;81:477–481) evaluated the effect of this oxide residue on the restoration of a bleached tooth with composite. The sample consisted of 15 extracted third molars, which were divided into three groups. In group A, the enamel was etched with phosphoric

acid and a composite restoration was bonded to the enamel surface. In group B, the enamel was bleached immediately before the bonding of the composite. In group C, the enamel was bleached, but before etching, the surface was treated with sodium ascorbate. Then, a testing machine was used to remove the composite bonding and determine the shear bond strength for all three groups. The authors found that composite bonding immediately after bleaching resulted in a 25% reduction in bond strength. When sodium ascorbate was applied after bleaching, and before the composite, the shear bond strength returned to the control level. The authors concluded that the sodium ascorbate enhances bond strength because it removes the oxide residue from the bleached enamel.

New method to reverse tooth ankylosis. If a maxillary anterior tooth is avulsed and replanted, it could become ankylosed, and the root could eventually undergo replacement resorption. But a recent study published in *Dental Traumatology* (2002;18:138–143) evaluated the possibility of reversing the ankylosis by treating the root surface with Emdogain. The sample consisted of 16 patients who had previously had trauma to a maxillary central incisor. In all cases, the tooth had ankylosed and was undergoing replacement resorption of the root. In this study, the ankylosed centrals were carefully removed, and the apical portion of the root was sectioned and removed. The root canal was filled to obturate the canal, and Emdogain was applied to the entire root surface. The root was then replaced back into the socket. The sample was monitored for an additional 15 months to determine the outcome of this technique. The authors found that 11 out of 16 teeth did not re-ankylose and were in function with no periapical signs of pathology. Four of the most severely injured teeth demonstrated recurrence of ankylosis after a mean period of six months. The results of this study show that treatment of replacement resorption after moderate trauma with replantation and the application of Emdogain appears to prevent or delay recurrence of ankylosis in most cases.